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**From:** Alam, Mahbub (ECY) [MALA461@ECY.WA.GOV]  
**Sent:** 8/6/2015 10:02:31 PM  
**To:** Szelag, Matthew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=f1e48230d96943f8acb72810e32ce8d6-Szelag, Matthew]  
**CC:** cnie461@ecy.wa.gov [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=084bdcc64365427fa3795d176eb53d94-cnie461@ecy.wa.gov]  
**Subject:** RE: Water Quality Criteria for organics and metals

Thanks, Matt.

We sit on the inter agency task force (Laurie Mann is EPA-water rep.) and I will follow up with them.

Mahbub Alam, PhD, PE  
Source Control and Stormwater Engineer  
425-649-7202; mahbub.alam@ecy.wa.gov

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**From:** Szelag, Matthew [mailto:Szelag.Matthew@epa.gov]  
**Sent:** Thursday, August 06, 2015 1:16 PM  
**To:** Alam, Mahbub (ECY) <MALA461@ECY.WA.GOV>  
**Cc:** Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>  
**Subject:** RE: Water Quality Criteria for organics and metals

I also let Becky Chu know about this issue and she is going to look into it.

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Matthew Szelag | Water Quality Standards Coordinator  
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**From:** Alam, Mahbub (ECY) [mailto:MALA461@ECY.WA.GOV]  
**Sent:** Thursday, August 06, 2015 11:46 AM  
**To:** Szelag, Matthew  
**Cc:** [cnie461@ecy.wa.gov](mailto:cnie461@ecy.wa.gov)  
**Subject:** RE: Water Quality Criteria for organics and metals

Matt:

Thank you for the explanation. I was in the same understanding, too. However, during a recent review of Lower Duwamish Waterway (LDW) Remedial Investigation (RI) Report, I found that Human Health WQC were reported as dissolved in the report. I am attaching some pages from RI with highlighted text that show this. I got confused and therefore wanted to clarify with you.

This is important because meeting surface water quality standards is an ARAR (Applicable or relevant and appropriate requirement) of the LDW cleanup. This may be an issue when long term monitoring data are collected after cleanup construction and compliance with ARAR is conducted.

Thanks,

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**From:** Szelag, Matthew [mailto:Szelag.Matthew@epa.gov]  
**Sent:** Thursday, August 06, 2015 10:19 AM  
**To:** Alam, Mahbub (ECY) <MALA461@ECY.WA.GOV>

**Cc:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>

**Subject:** RE: Water Quality Criteria for organics and metals

Hi Mahbub,

I'm sorry for the delay in responding and hope you are well too. In short, you can assume all of our 304(a) criteria are based on "total" concentrations unless otherwise specified in a footnote to the criteria table.

By way of background, the 304(a) criteria were based on "total" until EPA made the switch to "dissolved" for the majority of the metals. This was only for aquatic life criteria and not human health criteria. These should all be footnoted as "dissolved" in the criteria table (and you can read more here: [http://water.epa.gov/scitech/swguidance/standards/criteria/current/upload/1999\\_11\\_10\\_criteria\\_metalsinterpret.pdf](http://water.epa.gov/scitech/swguidance/standards/criteria/current/upload/1999_11_10_criteria_metalsinterpret.pdf), but the main rationale is that a primary mechanism for water column toxicity is adsorption at the gill surface which requires metals to be in the dissolved form for aquatic life).

However, even if the criterion for a given metal is based on "dissolved" for aquatic life, the corresponding human health criterion is not based on "dissolved". Our human health criteria values for metals are based on "total" concentrations unless indicated otherwise by a footnote in our 304(a) criteria. And, the same rule of thumb applies for organics – in general you can assume they are based on "total" concentrations unless otherwise specified in a footnote in the 304(a) criteria.

Admittedly, Ecology's proposed rule for human health is much more clear in specifying the form for human health criteria than our 304(a) criteria, stating:

*"All human health criteria for metals are for total metal concentrations, unless otherwise noted."*

(bottom of page 6: <http://www.ecy.wa.gov/laws-rules/wac173201a/p1203.pdf>)

Hope this helps. Please let me know if you have any further questions. I'm also cc'ing Cheryl Niemi on this response. Thanks,

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**From:** Alam, Mahbub (ECY) [<mailto:MALA461@ECY.WA.GOV>]

**Sent:** Monday, August 03, 2015 8:57 AM

**To:** Szelag, Matthew

**Subject:** Water Quality Criteria for organics and metals

Hi, Matt:

Hope you are doing well. I have a question for you regarding EPA's section 304(a) WQ criteria. I note that the criteria for metals are explicitly referred as "dissolved" criteria in section 304(a) WQ criteria tables for aquatic life protection. Does the dissolved fraction also apply for human health protection? What about other pollutants, e.g. organics? Are these based on "total" or "whole water" concentrations for both aquatic life and human health? This is not mentioned in the 304(a) criteria tables or in any footnotes. Can you tell me which criteria are based on "dissolved" and which are based on "total" for both aquatic life and human health. Also, I will appreciate a reference (rule/policy/guidance) that establishes this.

Thanks so much,

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